

ENDOCRINE-PSYCHIATRIC CORRELATIONS IN AFFECTIVE DISORDERS

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Abstract:

Because of the connections between the nervous and endocrine systems it is thought that endocrine dysfunctions may interfere with affective disorders. The cause-effect relation between the endocrine and psychiatric components is not yet known. **Objective:** to assess the prevalence of affective disorders among patients with endocrine pathology and the relative risk to develop this type of psychiatric disease according with the endocrine gland involved. **Method:** 1512 patients: 732 from the psychiatric department and 780 from the endocrinological department. The diagnosis of affective disorders was made according to international classification system ICD-10 and DSM IV; the endocrine diagnosis was made according with the national guide-line for endocrine diseases. **Results:** Sex ratio-1023 (67, 65 %) women and 489 (32, 35 %) men; mean age for the psychiatric patients was $48,082 \pm 5.4$ years and $43,843 \pm 13.5$ years for the endocrine patients; 673 (44.51 %) patients presented depression, 252 (16.67 %) patients presented mania and 341 (22.55 %) others psychiatric disturbances; the prevalence of depression for pituitary group was 41.8 %, for thyroidal group 57 %, for parathyroidian group 50 %, for adrenal group 52.30 % and for gonad group 41,6 %; for mono- or bipolar mania the prevalence was 9.8 % for the thyroidal group, 1.07 % for adrenal group and 14.77 % for the gonad group; the odds ratio for depression in thyroid pathology was 5.87 and for adrenal pathology was 3.47; the odds ratio for mania was 2.97 for gonad pathology and 2.14 for thyroid pathology. **Conclusion:** the calculated risk for patients with different categories of endocrine pathology to develop affective disorders is significant for those with thyroid and adrenal disease for depression and for those with gonad and thyroidal disease for mania.

Key-words: affective disorder, depression, mania, endocrine glands

INTRODUCTION

The term *psychoneuroendocrinology* reflects in its construction an appreciation of inextricable structural and functional relationships between the hormonal system and the behaviours that modulate and are derived from both (1, 2).

Affective disorders is the term designating a group of diagnoses in the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) classification system where a disturbance in the person's mood is hypothesized to be the main underlying feature and also have an effect on thoughts, behaviours and emotions. They include major depressive disorder and manic-depression. The difference is based on whether the person has ever had a manic or hypomanic episode. Thus, there are depressive disorders, of which the best known and most researched is major depressive disorder commonly called clinical depression or major depression, and bipolar disorder, formerly known as manic depression and characterized by intermittent episodes of mania or hypomania, usually interlaced with depressive episodes (3, 4).

Study of comorbid medical illnesses, may reveal interesting aspects regarding the pathogenesis of depression. Even high rates of affective disorders have been found in studies of common chronic medical conditions, including cardiovascular and cerebrovascular disorders, it remains unclear whether any specific medical pathology has a specific relation with this type of psychiatric disorder (5, 6).

Because of the connections between the nervous and endocrine systems, (hypothalamic involvement in mood determination, and the effects of thyroidian and ovarian hormonal disturbances on mood) it is thought that endocrine dysfunctions may interfere with affective disorders. The cause-effect relation between the endocrine and psychiatric components is not yet known (7, 8).

Starting from these premises the study of affective disorders in patients with endocrine pathology and the research of endocrine disturbances among psychiatric patients with mood abnormalities may contribute to the understanding of the implication of both endocrine and psychiatric components in the initiation, evolution and complications of affective disorders.

OBJECTIVES

To asses the prevalence of affective disorders among patients with endocrine pathology and the relative risk to develop this type of psychiatric disease according with the endocrine gland involved.

METHOD

The study was conducted between 2000 – 2004 in the University Psychiatric Hospital “Socola” Iași and Department of Endocrinology – University Hospital “St. Spiridon” Iași with a total of 1512 patients: 732 from the psychiatric department and 780 from the endocrinological department.

The diagnosis of affective disorders was made according to international classification system ICD-10 and DSM IV regarding clinical criteria; depressive symptom severity was assessed with the 21-item Hamilton Rating Scale for Depression and 17-item Hamilton Rating Scale for Anxiety.

The diagnosis of endocrine disorder consisted in clinical examination and biologic and imagistic tests according with the specific gland involved and who give the possibility to classify the endocrine pathology in: pituitary, thyroid, parathyroid, adrenal and gonadal.

Statistical analysis: the results were expressed as mean $\pm$ SD and analyzed statistically by means of chi-square test (odd ratio and relative risk), Spearman's rank correlation coefficient (allows to identify the strength of correlation within a data set of two variables, and whether the correlation is positive or negative).

RESULTS

A total of 1512 subjects enrolled, 1023 (67, 65 %) were women and 489 (32, 35 %) were men. The mean age for the psychiatric patients was 48,082 and 43,843 for the endocrinological patients (tab. I).

Table I. Age structure according to the study group

Patients	Mean age	SD	min.	max.
Psychiatry	48.082	5.418	22	81
Endocrinology	43.843	13.522	8	77

The psychiatric profile was normal for 246 (16.27 %) patients the remain 83.73 % presenting various psychiatric disorders (tab. II).

Table II. *Types of psychiatric disorders*

Psychiatric profile	No.	%
Normal	246	16.27
Depression	673	44.51
Mono-and bipolar mania	252	16.67
Other psychiatric disorders	341	22.55
Total	1.512	

The endocrine profile include five types of disorders in respect with the gland involved (pituitary, thyroid, parathyroid, adrenal and gonad) and was normal for 147 (9.72 %) patients (tab. III).

Table III. *Endocrine pathology in the study group*

Endocrine profile	No.	%
Normal	147	9.72
Pituitary diseases	117	7.73
Thyroidal diseases	428	28.30
Parathyroidian diseases	376	24.86
Adrenal diseases	65	4.29
Gonad diseases	379	25.06
Total	1.512	

Applying the Spearman's rank correlation coefficient test it was a strong correlation between the endocrine pathology and affective disorders (tab. IV).

Table IV. *The correlation endocrine diseases – affective disorders*

Spearman Rank 95% confidence interval	
Correlation coefficient – r	0.984615

Considering the endocrine diseases as a risk factor for affective disorders we calculated the odd ratio and relative risk (tab. V) with a value of OD = 3.4 of strong statistic relevance.

Table V. *The relative risk for affective disorders in endocrine pathology*

Endocrine vs. affective disorders	Value	95% confidence interval	
		Min	Max
Odd ratio (OR)	3.4588	0.3823	31.2921 (T)
Relative risk (RR)	3.4023	0.3845	30.1086 (T)
Chi – square (χ^2)	21.3741		
p	0.001424901957		

The prevalence of depression for pituitary group was 41.8 % (49 patients), for thyroidal group 57 % (244 patients), for parathyroidian group 50 % (188), for adrenal group 52.30 % (34) and for gonad group 41,6 % (158). For mono-or bipolar mania the prevalence was 9.8 % for the thyroidal group (42 patients), 1.07 % for adrenal group (7 patients) and 14.77 % (56 patients) for the gonad group. The diagnosis of depression with respect of each type of gland involved was significantly for thyroid, parathyroid and gonad, as for maniac disorders the most affected spectrum of endocrinopathies was: thyroidal diseases and gonad diseases (fig. 1).

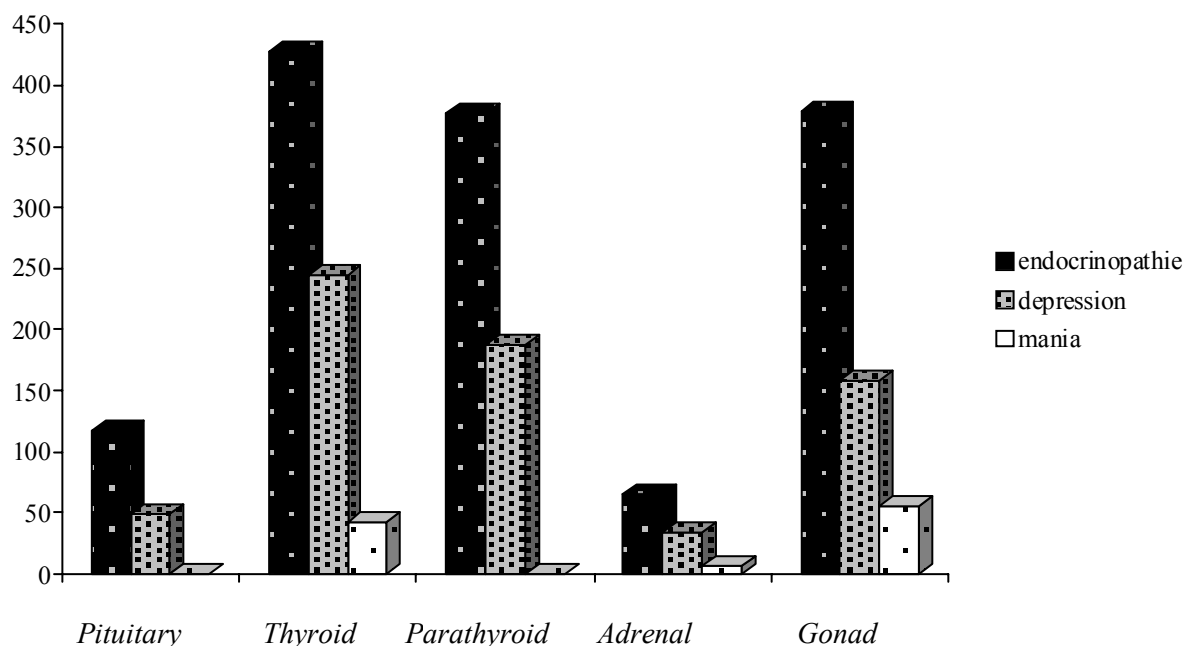


Fig. 1. The prevalence of affective disorders among patients with various endocrine diseases

The calculated risk for patients with different categories of endocrine pathology to develop affective disorders is significant for those with thyroid and adrenal disease for depression and for those with gonad and thyroidal disease for mania (tab. VI).

Table VI. The odds ratio of depression and mania in different endocrine diseases

	Value	95 % Confidence interval	
		Min	Max
Odds ratio (OR) – Depression			
Pituitary diseases	1.51	1.03	2.45
Thyroidal diseases	5.87	2.87	7.65
Parathyroid diseases	2.98	1.84	4.97
Adrenal diseases	3.47	1.87	4.65
Gonad diseases	2.54	1.75	5.01
Odds ratio (OR) – Mania			
Thyroidal diseases	2.14	0.95	3.97
Adrenal diseases	1.12	0.72	1.94
Gonad diseases	2.97	1.14	3.85

DISCUSSIONS

The study of endocrine correlation with psychiatric disorders has enjoyed increasing attention in the last years in the same respect with the issue of psychosocial etiology and quality of life measures. The occurrence of a psychoendocrine syndrome may not only have endocrine consequences (9, 10, 11), but also trigger complex neural, immune and metabolic alteration in a final common pathway of various interlocking processes.

Affective disorder symptoms are commonly seen in patients with various diseases (12) that way are not surprising that they have been associated with almost any endocrine pathology: the link between thyroid dysfunction and depression had been well established and a recent large register based study showed that hypothyroidism had a greater risk of depression or bipolar disorders, women are more likely to experience depression and anxiety disorders during periods of marked hormonal fluctuations, suggesting that gonadal hormones are involved in stress pathology, elevated cortisol level is a frequent finding in depression, and it has been proposed that this may be caused

by exposure to stress, the rate of psychiatric morbidity is higher in the pituitary deficient adults comparing with other disorders. (9)

However only in a few of endocrine entities (Cushing syndrome, hypocorticism, hyperthyroidism, hypothyroidism) the depressive symptoms reach the intensity of a major depressive disorder and the quality of organic mood syndrome.

Taking into account all these data our results may seem surprising due to the important number of patients with both endocrine- and psychiatric pathology. Figures follow the classic trend (thyroid, adrenal) with two exceptions: parathyroid and gonad. This could be explained by the great number of patients with hypocalcemic / hypomagnesiemic tetany (parathyroidian group) and with menopausal disturbances (gonad group) both with an important neuro-psychiatric component. Also by choosing to classify the endocrine disorder in "glands group" (in order to avoid too many variables in the statistic handling) it may interfere in the final results by cumulative effect of multiples endocrine pathologies with different psychiatric co-morbidities. Even so, the great number of patients raises the issue of the multidisciplinary approach in all subjects with endocrine and/or psychiatric disorders. A closer collaboration between endocrinologists and psychiatrists will lead to considerable clinical and research implications. A stronger psychosomatic connection may be crucial for the future development of psycho-neuroendocrinology.

Acknowledgments and disclosure

The authors declare that they have no potential conflicts of interest to disclose.

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